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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/787,086	02/27/2004	Takeshi Kato	NIT-156-05	4293

7590 12/28/2004

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EXAMINER

SONG, SARAH U

ART UNIT PAPER NUMBER

2874

DATE MAILED: 12/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/787,086

Applicant(s)

KATO ET AL.

Examiner

Sarah Song

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 October 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 20-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 20-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 09/402,585.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Applicant's communication filed on October 5, 2004 has been carefully considered and placed of record in the file. Claims 20 and 25 are amended. Claims 30 and 31 are newly added. Claims 20-31 are pending.

Claim Objections

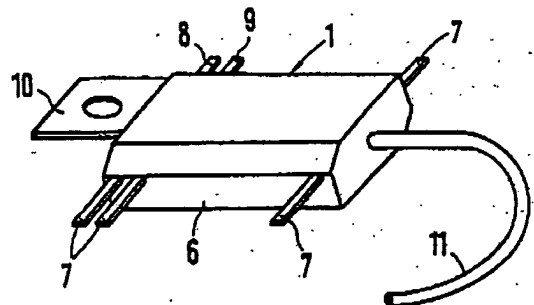
2. Claims 30 and 31 objected to because of the following informalities: the claims depend from canceled claims. For purposes of examination, claim 30 will be examined as depending from claim 23 and claim 31 will be examined as depending from claim 28 in order to provide proper antecedent basis for the claimed limitations. Appropriate correction is required.

3. **Claims 20-24 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ulmer et al. (EP 0 313 956 A2 previously relied upon) in view of Collins et al. (U.S. Patent 5,852,696 previously relied upon) and Hirai et al. (U.S. Patent 5,481,632 newly cited).**

4. Regarding claim 20, Ulmer et al. discloses an optical module comprising:

- an optical device (i.e. photodiode or laser diode, see abstract);
- an optical fiber 11 optically coupled to said optical device at one end; and
- a substrate (i.e. carrier strip, see abstract)

on which said optical device and said end of the optical fiber are mounted.



Ulmer et al. additionally discloses a transparent resin in the coupling region of the optical device and the optical fiber (see abstract).

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5. Ulmer et al. discloses the claimed invention except for a communication processing unit and the transparent resin being filled between a face of said optical device and said end of the optical fiber, said transparent resin being silicone resin.
6. Collins et al. discloses that it is known for optoelectronic devices to be coupled to a communication processing unit, such as a fiber to the home telecommunications network (column 1, lines 60-64).
7. Ulmer et al. and Collins et al. are analogous art because they are from the same field of endeavor, that is packaged optical and optoelectronic devices.
8. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to couple a communication processing unit with the device of Ulmer et al.
9. The motivation for doing so would have been to provide a transmission network for efficient low-cost, high-speed communications.
10. Hirai et al. discloses an optical junction comprising a silicone resin filled between abutting end faces of optical waveguide unit 60, and optical fiber units 70 and 80 (column 14, lines 4-9). It is additionally noted that silicone resin is a transparent resin.
11. Ulmer and Hirai et al. are analogous art as pertaining to optical devices.
12. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the silicone resin (transparent resin) of Hirai et al. at the interface between the face of the optoelectronic device and an end of the optical fiber of Ulmer et al.
13. One of ordinary skill in the art at the time the invention was made would have been motivated to provide the silicone resin filled between the face of said optical device that is optically coupled to said optical fiber, and an end of said optical fiber that is optically coupled to

said optical device in order to provide an index-matched interface, thereby reducing reflections at the interface and improving optical coupling.

14. Regarding claim 21, as noted above the refractive index of the transparent silicone resin is an index matching resin (see column 14, lines 4-9 of Hirai et al.). Therefore, the refractive index of the resin matches that of the optical fiber.

15. Regarding claim 22, Hirai et al. does not expressly disclose that the silicone resin is a gel or is in gel form. However, silicone is well known in the art to be readily available in gel form. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide transparent resin in gel form in order to facilitate application of the resin at the interface.

16. Regarding claim 23, the optical device, said end of the optical fiber, and said substrate are placed inside a resin casing 6 (i.e. plastic sheath, see abstract) as shown in Figure 1 of Ulmer et al.

17. Regarding claim 24, Ulmer et al. discloses that, "plastic (6) is moulded around the arrangement as a whole." Therefore, it is evident that the optical device, said end of the optical fiber and said substrate are placed in a cavity inside said resin casing, the cavity being filled by the optical device, said end of the optical fiber, and said substrate.

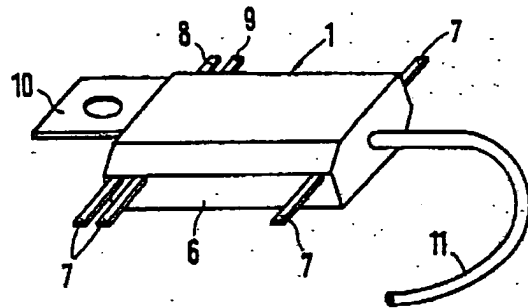
18. Regarding claim 30, Ulmer et al. discloses that the resin case is molded (i.e. formed by molding) but does not expressly disclose that the resin casing is formed by transfer molding. However, the method of forming a device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight.

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19. Claims 25-29 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ulmer et al. in view of Hirai et al.

20. Regarding claim 25, Ulmer et al. discloses an optical module comprising:

- an optical device (i.e. photodiode or laser diode, see abstract);
- an optical fiber 11 optically coupled to said optical device at one end; and
- a substrate (i.e. carrier strip, see abstract)



on which said optical device and said end of the optical fiber are mounted.

Ulmer et al. additionally discloses a transparent resin in the coupling region of the optical device and the optical fiber (see abstract).

21. Ulmer et al. discloses the claimed invention except for the transparent resin being filled between a face of said optical device and said end of the optical fiber.

22. Hirai et al. discloses an optical junction comprising a silicone resin filled between abutting end faces of optical waveguide unit 60, and optical fiber units 70 and 80 (column 14, lines 4-9). It is additionally noted that silicone resin is a transparent resin.

23. Ulmer and Hirai et al. are analogous art as pertaining to optical devices.

24. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the silicone resin (transparent resin) of Hirai et al. at the interface between the face of the optoelectronic device and an end of the optical fiber of Ulmer et al.

25. One of ordinary skill in the art at the time the invention was made would have been motivated to provide the silicone resin filled between the face of said optical device that is

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optically coupled to said optical fiber, and an end of said optical fiber that is optically coupled to said optical device in order to provide an index-matched interface, thereby reducing reflections at the interface and improving optical coupling.

26. Regarding claim 26, as noted above the refractive index of the transparent silicone resin is an index matching resin (see column 14, lines 4-9 of Hirai et al.). Therefore, the refractive index of the resin matches that of the optical fiber.

27. Regarding claim 27, Hirai et al. does not expressly disclose that the silicone resin is a gel or is in gel form. However, silicone is well known in the art to be readily available in gel form. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide transparent resin in gel form in order to facilitate application of the resin at the interface.

28. Regarding claim 28, the optical device, said end of the optical fiber, and said substrate are placed inside a resin casing 6 (i.e. plastic sheath, see abstract) as shown in Figure 1 of Ulmer et al.

29. Regarding claim 29, Ulmer et al. discloses that, "plastic (6) is moulded around the arrangement as a whole." Therefore, it is evident that the optical device, said end of the optical fiber and said substrate are placed in a cavity inside said resin casing, the cavity being filled by the optical device, said end of the optical fiber, and said substrate.

30. Regarding claim 31, Ulmer et al. discloses that the resin case is molded (i.e. formed by molding) but does not expressly disclose that the resin casing is formed by transfer molding. However, the method of forming a device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight.

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Response to Arguments

31. Applicant's arguments with respect to claims 20-31 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

32. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

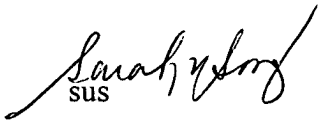
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sarah Song whose telephone number is 571-272-2359. The examiner can normally be reached on M-Th 7:30am - 6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on 571-272-2344. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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PRIMARY EXAMINER